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A URETHROSCOPIC STUDY OF 500 MALE PATIENTS IN A VENEREAL DISEASES HOSPITAL *

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THE most common complaint bringing the patient to the venereal disease clinic is a urethral discharge, and obviously the most frequent cause of the ailment is the gonococcus. The end results of conservative treatment of gonococcal infections at the hands of urologists are on the whole good, but a sizable percentage of patients develop complications which will command the skill, patience and ingenuity of the most capable physician. In any large urological clinic many patients are admitted whose complaints stem from a previous urethritis, and unless these cases are rescued from the routine of the clinic for special study and treatment, they will have their prostates massaged, urethras sounded and irrigated for weeks or months and consume pounds of red, white and blue internal antiseptics without relief of their symptoms. We are of the opinion that patients who fail to make a complete recovery from a chronic urethritis, whatever the cause, in a reasonable length of time are suitable candidates for urethroscopic examinations. We have observed a number of cases in which urethroscopic examinations were unnecessarily delayed, much to the detriment of pathology, purse and psyche of the patient.

Within the past five years we have studied urethroscopically a group of 500 male patients in whom pathology above the bladder neck had been excluded. These patients have presented symptoms which fall into one or more of the following groups :

(1) Those who are in good general physical condition but have some prolonged and persistent symptom such as urethral discharge which has not yielded to recognised forms of therapy.

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(2) Those who have well-defined complaints which are described as pain, burning or itching in the urethra, or discomfort and feeling of heaviness in the perineum, rectum (prostate) or suprapubic region. These symptoms may or may not be related to urination. Many of these patients have received long continued treatment without appreciable benefit.

(3) Those who give a history of disturbances of the urinary function, such as frequency, nycturia, difficulty in beginning the act, small or divided stream, inability to retain the urine as in the past and partial retention. In this group we do not consider prostatism, with or without symptoms, bladder or other calculi, syphilis or other diseases of the central nervous system.

(4) Those who complain of blood in the urine or in the semen. In this group of patients where there is an acute inflammation of the lower urinary tract we delay the use of the urethroscope. Some patients with hemospermia and no discoverable infection are 'scoped after a short period of search and observation for vesiculitis, prostatitis, etc.

(5) Those patients whose only complaints are referable to their sexual life, *i.e.*, premature ejaculation and impotency. In this group we often find recently married young men who are desperate, for their wives are sexually unappeased, nervous and profoundly affected psychically. In a number of instances separation has been threatened or even divorce proceedings considered. Also many married men past forty who get the notion that their sexual powers are waning.

Our plan for the management of these patients is to have them make one or more visits so that we may become thoroughly acquainted with them, their complaints and their tissues. Also by preliminary instrumentation we prepare their urethras for endoscopic study. (To secure this large series of cases for instrumental examination many patients were observed.) There should be a natural tendency in any large urological clinic to refer patients who fail to respond to conservative treatment in a reasonable length of time to the cystoscopic room. In our institution we have such a plan and it works admirably; in addition it gives the cystoscopist the opportunity to select the cases which in his opinion will respond to a change of local measures and at the same

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time refer those patients which will require hospitalisation for a complete higher urinary tract investigation or surgery.

The principal diagnoses recorded on these patients before a urethroscopic examination was made are as follows :

Chronic gonococcal urethritis	Chronic nonspecific urethritis	Chronic prostatitis	Urethral stricture	Undiagnosed
2 per cent.	6 per cent.	33 per cent.	29 per cent.	30 per cent.

In many instances, as pointed out above, one or more of these conditions were found in the same patient. It is of interest to record that, of these 500 patients, 85 per cent. gave a history of one or more attacks of gonorrhœa.

We have used with most satisfactory results for several years a 1 : 1,000 solution of nupercain, or 1 per cent. solution of diathane as a local anæsthetic. The medicament is instilled anteriorly and posteriorly into the urethra and the patient is instructed to hold it for ten to fifteen minutes. Either of these surface anæsthetics properly used, plus gentleness and celerity in the use of the 'scope, will contribute much to the comfort of the patient, minimise trauma of the tissues and favour success of the instrumentation. We use with a great deal of satisfaction the McCarthy cystourethroscope, size 20, and the Koch urethroscope. This latter instrument can be had in sizes from 18 to 26. The cystourethroscope has its advantages as it enables the operator to obtain a good view of the bladder, the bladder neck and the urethra, and ureteral catheterisation usually can be done if there are indications for this procedure. We find it satisfactory to make the first examination with the McCarthy instrument and examine the bladder and the urethra at the first sitting. Direct vision instruments such as the Koch are ideal for topical applications. The experienced operator can see well with size 22, and for the sensitive urethra a size 18 will provide a fair field for treatment.

Certain requirements are essential in making a urethroscopic study : (A) The patients must be carefully selected ; (B) anæsthesia must be effective ; (C) the instrumentation must be done gently and speedily ; (D) tissue trauma must be prevented ; and (E) the

findings must be carefully and correctly interpreted. In our experience the first three of these requirements are readily met, but the most skilled instrumentalist will be hard pressed at times for a satisfactory explanation as to why patients with no definite pathology in the urethra will be relieved of long-standing symptoms by a few topical applications of silver nitrate to the posterior urethra. Conversely there are patients with discoverable pathology who obtain no relief from any treatment. Pelouze has spoken facetiously of urethroscopic examinations, comparing the procedure to a "dreamer's paradise." There is no question that the tyro and the charlatan will both take an advantage of their patients, the one through lack of ability and ignorance and the other through wilful deception and a greed for money. However, the examination of the entire urethra is a valuable and necessary procedure and demanded in many patients whose complaints are annoying and persist in the face of recognised and dependable therapy.

In our clinic before a patient is subjected to a cysto-urethroscopic examination a careful review of his history and previous treatment is made, and in some instances a change in the treatment procedures produces the desired results and further instrumentation is avoided. In those cases in which the cystoscopist agrees that the examination is necessary an appointment is made and adequate time is allowed for the intense study of each patient. In some patients where there is a question of interpretation of the pathological findings, especially in borderline cases, several staff physicians can immediately be called for consultation. In this manner we believe errors in diagnoses have been kept at a minimum. In our series of cases we have found the following indications for urethroscopic examination :

Chronic urethral discharge	Urethral discomfort, itching, burning, pain ant. urethra	Urethral discomfort, itching, burning, pain post. urethra	Hemo-spermia	Persistent prostatitis	Premature ejaculation	Urethral stricture (slow progress)
50 per cent.	20 per cent.	17 per cent.	1 per cent.	5 per cent.	3 per cent.	4 per cent.

From this table it will be observed that 50 per cent. of the patients complained of a urethral discharge accom-

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panied by one or more of the symptoms outlined above. A urethral discharge in the male is the *bête noire* of his existence, and should he be of the introspective type all treatment may prove futile. These patients are not numerous, but when all other measures fail a long sea voyage in a ship without a medical officer may be recommended, and this has been known to result in a complete cure. There is a residuum of patients which will be given every conceivable form of therapy but their complaints will continue ; for these the services of an understanding psychiatrist will be their only refuge.

A brief description of the appearance of the normal urethra and a discussion of the most frequent pathological changes observed are essential to a clear understanding of urethroscopic examinations. With a Koch instrument in position at the internal urethral orifice just short of obtaining urine the 'scope is slowly withdrawn and the infundibulum or bladder neck is observed, and radiating anteriorly are seen the regular folds of the mucous membrane. The figure observed is somewhat fan-shaped with its apex upward. The canal from the bladder to the posterior surface of the verumontanum is called the prostatic fossette, or post-montanal space, and this area is often the seat of numerous pathological changes. The orifices of some of the prostatic glands, when they are infected, are plainly seen as gaping openings from which *débris* extrudes converting the area into a regular "cesspool." If the prostate gland is massaged with the instrument *in situ*, pus can be demonstrated coming from the gland openings. Two or more of these ducts may become confluent when small abscesses have ruptured with subsequent larger openings remaining. Frequently the glandules (prostatic) become swollen, forming individual cystic areas which may be transparent or translucent, pedunculated or not ; they are usually vascular, located in any part of the fossette from the internal urethral orifice to the most anterior portion just over the *veru*. These cystic areas may be so extensive in formation as entirely to obliterate the fossette. The grouping of the cystic areas resembles "a mass of fish eggs," and when magnified they look like "bunches of grapes." There were 80 cases in which complete obliteration of the space was noted, while in 150 others only partial formation was present. These areas, especially where considerable

cystic formation is present, bleed very readily when coming in contact with the instrument, and this pathology is found most often in patients complaining of such symptoms as perineal discomfort, chronic discharge, terminal hæmaturia, hemospermia, and others. They are very commonly found in patients with a chronic prostatitis. In many instances it is necessary to destroy these areas completely before the symptoms disappear.

In hard infiltration in the fossette the mucous membrane becomes a reddish-grey, the lustre disappears and it becomes dry and dull as the epithelium desquamates, often disclosing denuded areas which bleed easily. The numerous folds of the healthy fossette disappear owing to fibrosis, and when the fibrotic changes are far advanced nothing but a rigid, tortuous tube remains. Occasionally vegetations or polypi are found in this region, they may be located on any of the four surfaces.

In hypertrophy of the prostate, median or lateral lobe, enlargements can be readily diagnosed with the McCarthy instrument, and when the change continues into the fossette the hypertrophy can be seen with either instrument (the McCarthy or Koch).

As the instrument is withdrawn further forward the *veru* is brought into view as a structure which is elongated, spindle-shaped and smooth and covered with smooth red mucosa continuous with the urethral crest. At the middle of the *veru* a shallow depression is observed which is the utricle, and the openings of the ejaculatory ducts may be found along its edges. Chronic infections are often harboured here. In long-standing infections of the vesicles marked changes may be observed in this region. For the correct interpretation of the pathological changes about the *veru* it is necessary that a mental picture of the appearance of the normal tissue be had. The area presents a series of delicate crescentic folds of the mucosa with their concavity downward, and this tissue is continued to the urethral crest. Laterally to the *veru* are the prostatic sinuses, and many duct openings are usually observed. Also along the roof and sidewalls numerous mucous crypts and prostatic openings are seen. This area so far described is about 30 mm. long. The actual function of the *veru* which is composed of erectile tissue is not known.

Soft infiltration is a frequent lesion encountered in the

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posterior urethra. The mucosa is highly congested, bleeds easily, involving the verumontanum, which is swollen, granular and distorted. If the utricle of the "vera" is patent, and a chronic gonorrhœa is present, one of the favourite habitats for the germ is within this space on account of its columnar epithelial lining; another focus for the organism of persistent gonorrhœa is in that small fossa just posterior to the verumontanum where granulation tissue often persists and prolongs the disease until this tissue is destroyed.

The verumontanum may be hypertrophied to such a size as completely to fill up the entire circumference of the urethra at its location; resembling the cervix uteri in a case of cervicitis, it is of a bluish-red colour, bleeding easily on contact; if the ejaculatory ducts are visible the "vera" resembles a "diver's helmet."

Vegetations or polypi are sometimes formed on the verumontanum resembling a "cock's comb," and when these are of the pedunculated variety resemble an "eel" and are called "phallus-shaped-polypi."

When the verumontanum is invaded by sclerosis it becomes yellowish, shrunken and withered, the utricle and ejaculatory ducts are narrowed. These lesions cause such symptoms as sudden violent pain, which some patients complain of, occurring at time of ejaculation, often present in chronic prostatitis.

After viewing the *veru* the 'scope is withdrawn further forward and the membranous urethra is entered. In this portion of the canal the mucous membrane is thrown into folds due to the presence of the compressor muscle. In this region are numerous mucous crypts. This section of the canal as viewed through the 'scope has the appearance of a wheel, the hub being the lumen of the urethra and the radiating folds representing the spokes. At this point in the urethra the instrument is held firmly by the compressor muscle. This division of the canal is about 2 cm. in length. Vegetations, polypi or papillomata are also found in the membranous urethra, especially of the pedunculated variety; in this region the changes are similar to those which will be described in the anterior urethra except for the glandular changes which are much more extensive in the latter.

As the 'scope is slightly withdrawn the bulb is entered and this portion of the canal is characterised by a long,

well-defined vertical slit, due to the ischio-cavernosa muscles which are present at this level. The mucous membrane which is thrown about these muscle fibres on either side shows well-defined folds. The image seen at this section of the urethra consists of a central figure, which is the lumen of the mucous membrane. The mucosa is thin and delicate in individuals with atrophic sexual organs, and the colour of the tissue varies from a blood-red to grey, depending upon the vascularity of the tissue. Large instruments when they fill the canal may cause a change in the appearance of the tissue, as will also certain drugs, such as cocaine, stovaine, etc. As the 'scope is further withdrawn, the vertical slit observed in the bulb becomes rounded until the glans penis is reached and then it assumes an oval shape. Soft infiltration is found chiefly in early chronic anterior urethritis, but through the evolution of the inflammatory process the soft infiltration is replaced by hard infiltration; it is customary to see healthy mucosa alternate with portions attacked by soft infiltration and hard infiltration as well, the infiltration distorting the normal longitudinal fold formation (spokes of wheel), diminishing them in number to two or three "spokes of an irregular wheel." The glands of the anterior urethra (Lac. Morgagni and Littre) are always involved, and mucous purulent discharge is seen exuding from them. As the condition progresses toward hard infiltration the fibrous tissue forms around the glands; if the excretory ducts are not involved, the glandular content is allowed to escape (glandular type), disclosing large patent golf-holed crater-shaped glands; when the fibrous tissue obstructs the excretory ducts the secretory products are retained and accumulate, forming little cysts (follicular type), this latter variety is accompanied by a more or less purulent tenacious discharge. In the glandular type are found the cases which complain of a slight morning discharge which becomes profuse after the passage of a sound and gonococci are often found; the patient may insist that the physician infected him with the instrument. In the follicular type the subepithelial cystic cavities are filled with colloidal substance, but may be transformed into purulent cysts, disseminated, or present in one or more heaps. These millet seed-like follicles can be felt on external palpation over a sound, and make up our most stubborn cases of

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chronic urethritis. Most generally we find a mixed type of both glandular and follicular varieties in the same individual in chronic urethritis. Excrescents or papillomata are often found in the anterior urethra similar to those found on the prepuce of the penis, especially accompanying soft infiltration. The findings in the series of 500 urethroscopies are summarised in the accompanying table.

URETHROSCOPIC FINDINGS IN SERIES OF 500 CASES

Findings in posterior urethra	Post-montanal space or prostatic fossette.	Lymphocystic (cysts) completely filling space : 80 cases (early thought to be tubercular phenomena (Pelouze)).	Enlarged patent prostatic ducts (pus plugs) ; 100 cases.	Soft infiltration in fossa just post. verumontanum : 5 cases.	
		Evidence of cystic formation : 150 cases.	Excrescent formation : 15 cases.	Hard infiltration including atrophy of verumontanum : 10 cases.	
	Verumontanum.	Enlarged congested and distorted : 70 cases.	Excrescent formation on same : 2 cases.	Inflamed, granular ejaculatory orifices and gaping urethra : 120 cases.	
	Membranous urethra.	Soft infiltration : 50 cases.	Vegetation formation (papilloma) : 3 cases.	Hard infiltration : 25 cases.	Diverticulum : 1 case.
Findings in anterior urethra	Soft infiltration : 50 cases.	Hard infiltration : 95 cases Glandular type : 35 cases Follicular type : 5 cases Mixed types : 60 cases			

In 65 patients the findings were wholly negative. In many instances one or more of these lesions were discovered in the same patient.

SUMMARY

(1) A urethroscopic study of 500 male patients in a venereal disease clinic with pathology below the bladder neck is presented.

(2) The subjective symptoms which brought the patients to the clinic are discussed in five divisions.

(3) The plan of management prior to urethroscopic examination is outlined.

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(4) The diagnoses as recorded prior to the instrumental examinations are shown in tabular form.

(5) The indications for the instrumental examinations are discussed.

(6) The local anæsthetics employed and the essentials for a satisfactory urethroscopic study are considered.

(7) A description of the normal urethra and a brief discussion of the most frequent pathological changes observed are recorded.

(8) The pathological findings in the series are presented by table.

CONCLUSIONS

Reviewing these 500 case histories has only served to confirm our opinion that the use of the urethroscope is as necessary to the physicians who diagnose and treat urological conditions as are the stethoscope and ophthalmoscope to the internist. When the practitioners who accept these cases for treatment add to their armamentarium these instruments and learn their uses, then and only then will these patients receive the best that scientific medicine can give.